

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1           Claim 1 (currently amended): A detector assembly for quantifying  
2   concentration of positron emitters in fluids within a microfluidic assembly,  
3   comprising:  
4           a base;  
5           a window formed in the base;  
6           a microfluidic channel disposed in the base for allowing liquids to flow  
7   through the base;  
8           a solid-state charged particle detector integral with said ~~supported by the~~  
9   base wherein a first electrode of said solid-state charge charged particle detector is  
10 disposed on a first side of said base and a second electrode of said solid-state  
11 charge charged particle detector is disposed on a second side of said base in  
12 spaced relation from said first side of said base; wherein the window is defined by  
13 portions of said based disposed between said microfluidic channel and said first  
14 and said second electrodes of said charged particle detector ~~and the microfluidic~~  
15 ~~channel; and~~  
16           the window has a thickness sufficient to allow transmission of beta particles  
17 from positron emitters within the microfluidic channel to be detected by the solid-  
18 state ~~charge~~ charged particle detector.

1           2.       (currently amended): The detector assembly of Claim 1 wherein:  
2           a portion of the base adjacent the window and supporting the solid state  
3 ~~charge~~ charged particle detector has a thickness sufficient to substantially  
4 attenuate the transmission of beta particles whereby a linear resolution of the  
5 solid-state ~~charge~~ charged particle detector is increased.

1           3.       (cancelled)

1 4. (cancelled)

1 5. (cancelled)

1 6. (cancelled)

1 7. (cancelled)

1 8. (cancelled)

1 9. (cancelled)

1 10. (Original): The detector assembly of Claim 1 wherein:  
2 the base is at least in part made from a material selected from the group of  
3 materials consisting of glass, polymer, silicon, or derivatives thereof.

1 11. (cancelled)

1 12. (cancelled)

1 13. (cancelled)

1 14. (currently amended): A detector assembly for quantifying a  
2 concentration of positron emitters in a microfluidic assembly, the beta  
3 detector assembly comprising:  
4 a base;  
5 a microfluidic channel disposed in the base enabling fluids to flow through  
6 the base;  
7 collimation means disposed in the base proximate the microfluidic channel  
8 for collimating charged particles; and  
9 a solid-state charged particle detector supported by the base and in  
10 communication with the collimation means, wherein a first electrode of the solid-  
11 state charged particle detector is disposed on a first side of the base and a second

12 electrode of the solid-state charged particle detector is disposed on a second side of  
13 the base in spaced relation from the first side of the base.

1 15. (currently amended): The detector assembly of Claim 14 wherein:  
2 a portion of the base adjacent the window and supporting the solid state  
3 ~~charge~~ charged particle detector has a thickness sufficient to substantially  
4 attenuate the transmission of beta particles whereby a linear resolution of the  
5 solid-state ~~charge~~ charged particle detector is increased.

1 16. (cancelled)

1 17. (cancelled)

1 18. (cancelled)

1 19. (cancelled)

1 20. (cancelled)

1 21. (cancelled)

1 22. (original): The detector assembly of Claim 14 wherein:  
2 the base is at least in part made from a material selected from the group of  
3 materials consisting of glass, polymer, silicon, or derivatives thereof.

1 23. (cancelled)

1 24. (cancelled)

2 25. (currently amended): A detector assembly for quantifying a  
3 concentration of positron emitters in a microfluidic assembly, the beta detector  
4 assembly comprising:

5 a base constructed at least in part from a material selected from the group  
6 of materials consisting of glass, polymer, silicon, or derivatives thereof;

7 a microfluidic channel disposed in the base enabling fluids to flow through  
8 the base;

9 a solid-state charged particle detector supported by the base wherein a first  
10 electrode of the solid-state charged particle detector is disposed on a first side of  
11 the base and a second electrode of the solid-state charged particle detector is  
12 disposed on a second side of the base in spaced relation from the first side of the  
13 base; and

14 window means disposed in the base adjacent the microfluidic channel for  
15 increasing the linear resolution of the solid-state ~~charge~~ charged particle detector.

1 26. (currently amended): The detector assembly of Claim 25 wherein:  
2 a portion of the base adjacent the window means and supporting the solid  
3 state ~~charge~~ charged particle detector has a thickness sufficient to substantially  
4 attenuate the transmission of beta particles whereby a linear resolution of the  
5 solid-state ~~charge~~ charged particle detector is increased.

1 27. (cancelled)

1 28. (cancelled)

1 29. (cancelled)

1 30. (cancelled)

1 31. (cancelled)

1 32. (cancelled)

1 33. (cancelled)

1 34. (cancelled)

1            35.    (cancelled)

1            36.    (cancelled)

1            37.    (cancelled)